

 **EXPLORE**

 **INVESTIGATE**

 **EXPERIMENT**

 **APPLY**

Building a deep passion for the living world through practical-based learning, cyclic skill mastery, and inquiry-driven problem solving.

## Curriculum Map Years 7-13

### SYNOPTIC SYNTHESIS & APPLICATIONS

#### Energy Transfers



- Light-Dependent & Independent Photosynthesis
- Glycolysis, Krebs Cycle & Oxidative Phosphorylation
- Anaerobic Metabolic Paths
- Ecosystem Energy Transfers & Nutrient Cycles

#### Responses to Environmental Change

- Receptors, Myogenic Heart Rate & Action Potentials
- Synaptic Transmission & Muscle Contraction Kinetics
- Homeostatic Blood Glucose Control & Diabetes
- Nephron Architecture & Advanced Osmoregulation

#### Populations, Technology & Expression

- Hybrid Crosses, Epistasis & Population Genetics
- Speciation Dynamics Succession & Conservation
- Epigenetics, Transcriptional & Oncogenesis
- Recombinant DNA Technology & Genetic Fingerprinting

### ADVANCED CORE BIOLOGY

#### BIOLOGICAL MOLECULES & CELLS



- Carbohydrates, Lipids & Complex Proteins
- Enzyme Kinetics & Inhibition Mechanisms
- Eukaryotic, Prokaryotic & Viral Ultrastructure
- Co-Transport & Immunology Response
- Core Practicals: Food Tests, Enzyme Factors, Membranes

#### EXCHANGE & TRANSPORT SYSTEMS



- Gas & Vent Gas Exchange (Insects, Fish, Mammals, Plants)
- Hemoglobin Dissociation & Mammalian Circulation
- Xylem & Phloem Mass Transport Kinetics
- Core Practicals: Heart Dissection, Potometer

#### GENETICS, VARIATION & DIVERSITY



- DNA, RNA & the Triplet Code
- Transcription, Translation & Gene Mutation
- Meiosis & Allelic Selection Pressures
- Taxonomy, Phylogeny & Community Ecology
- Core Practical: Species Field Sampling

### REGULATION, INHERITANCE & MASTERY

#### HOMEOSTASIS



- Nervous System
- Synapses & Reflexes
- Ocular & Cerebral Architecture
- Endocrine System & Diabetes Regulation
- Osmoregulation & Thermoregulation Mechanics

#### INHERITANCE & EVOLUTION



- Sexual vs. Asexual Meiotic Reproduction
- DNA Architecture & Protein Synthesis
- Monohybrid Inheritance & Genetic Disorders
- Selective Breeding & Genetic Engineering

#### EVOLUTION & EXAM MASTERY



- Darwinian vs. Lamarckian Evolutionary Theory
- Speciation, Fossils & Extinction Events
- Phylogenetic Classification Systems
- Exam Strategy & Practical Analysis

### SYSTEMS, PATHOLOGY & ECOLOGY

#### ORGANISM ORGANISATION



- Enzymatic Digestion Dynamics
- Cardiac Cycle & Blood Vessel Architecture
- Coronary Heart Disease & Cancer Risk Factors
- Plant Tissues & Mass Transport

#### INFECTION & RESPONSE



- Pathogen Profiles
- Primary & Secondary Immune Defences
- Vaccination Principles & Drug Development
- Monoclonal Antibodies & Culturing Microorganisms

#### ECOLOGY



- Interdependence & Biomass Pyramids
- Carbon & Water Biogeochemical Cycles
- Biotic/Abiotic Adaptations & Field Sampling
- Global Warming, Land Use & Food Security

### GCSE BIOLOGY FOUNDATIONS

#### CELL BIOLOGY & TRANSPORT



- Cell Ultrastructure & DNA
- Mitosis & The Cell Cycle
- Stem Cells & Differentiation
- Transport: Diffusion, Osmosis & Active Transport
- Required Practical: Osmosis Investigation

#### FOUNDATION BIOENERGETICS



- Photosynthesis Fundamentals
- Limiting Factors of Autotrophic Growth
- Metabolic Uses of Glucose
- Required Practical 5: Light Intensity & Reaction Rates

### INTEGRATED SYSTEMS & GENETICS



#### HUMAN BODY

- Breathing Mechanics & Gas Exchange
- Impact of Disease & Drugs
- Digestive System Anatomy
- Enzyme Action & Healthy Nutrition

#### BIOENERGETICS



- Aerobic vs. Anaerobic Respiration
- Fermentation & Cellular Energy
- Photosynthesis Equations
- Leaf Structure & Plant Mineral Needs

#### GENETICS



- Chromosomes & Genetic Material
- Human Genome & Inherited Disorders
- Natural Selection & Biodiversity
- Extinction

### INTRODUCTION TO BIOLOGY

#### CELLS



- Animal & Plant Cell Structures
- Specialised Cells & Bacteria
- Light Microscopy Principles
- Scientific Drawing & Microscopes

#### ECOSYSTEMS



- Food Chains & Interdependence
- Competition & Invertebrate Classification
- Plant Reproduction & Seed Dispersal
- Environmental Toxins & Bioaccumulation

#### REPRODUCTION



- Gametes & Fertilisation
- Human Reproductive Anatomy
- Puberty & Menstrual Cycle
- Pregnancy, Birth & Variation

Note: Red text =  
Separate Science only  
(GCSE topics)

GCSE exam board: AQA  
A-Level exam board: AQA

YEAR  
10

YEAR  
9

YEAR  
8

YEAR  
7